

MEMORANDUM

TO: Vermont Adult Performance Indicator Project Advisory Group

FROM: John Pandiani
Lisa Gauvin

DATE: September 24, 1997

RE: Hospitalization Rates

This week's performance indicator was prepared in response to a request from Dr. David Long from Rutland Area Community Services for information on hospitalization rates of clients served by CRT programs.

The attached pages present the results of responding to this question using the analytical approach that we developed in our analysis of incarceration rates for CRT clients (PIP weekly report, April 3, 1997). Rates of hospitalization for behavioral health care subsequent to treatment and rates of hospitalization for behavioral health care prior to treatment were determined, and the two rates were compared to provide an adjusted outcome ratio.

We look forward to your comments on the appropriateness of this kind of information for a Vermont mental health report card, and the effectiveness of the presentation for a diverse audience.

HOSPITALIZATION RATES

For People Served by Community Rehabilitation and Treatment Programs in Vermont

QUESTION: Do hospitalization rates of people served by Community Rehabilitation and Treatment programs vary among community mental health centers in Vermont?

DATA: Two data sets were used in this analysis. The Quarterly Service Report (QSR) database maintained by the Vermont Department of Developmental and Mental Health Services (DDMHS) includes basic demographic and clinical information for all clients served by CRT programs for adults with a severe and persistent mental illness. The Inpatient Behavioral Health Care database maintained by DDMHS includes basic demographic and clinical data and information on the dates of hospitalization people who spent time in the Vermont State Hospital, general hospitals in Vermont or New Hampshire, the Brattleboro Retreat, or the V.A. Hospital in White River Junction under a mental health or substance abuse Major Diagnostic Category. The Inpatient database includes no unique person identifiers. The QSR database includes clinic specific unique person identifiers, but there is no unique person identifier shared by the state's community mental health centers.

ANALYSIS: The analysis presented here approaches the issue of hospitalization of CRT clients from three distinct perspectives. First, hospitalization subsequent to treatment is used as a measure of treatment outcome. The proportion of the 1991 CRT clients who had been hospitalized for behavioral health care during FY992 was determined for each of Vermont's ten CRT programs using the probabilistic population overlap statistic¹. This rate of hospitalization during the year subsequent to community treatment was also determined for CRT clients served during FY1992-1994. A lower rate of subsequent hospitalization may be interpreted as indicating a more favorable treatment outcome.

Because rates of hospitalization subsequent to treatment may be strongly influenced by the degree to which individual CRT programs serve people with a disorder severe enough to require previous hospitalization, a second measure of hospitalization was applied to each CRT program. This second measure uses hospitalization rates prior to treatment as a measure of program case-mix and the accessibility of services. Specifically, the proportion of 1991 CRT clients who had been hospitalized for behavioral health care during the previous year was determined for each of the state's CRT programs using the probabilistic population overlap statistic. This rate of hospitalization during the year subsequent to community treatment was also determined for CRT clients served during FY1992-1994. A higher rate of previous incarceration may be interpreted as indicating a program that is more accessible to people with a history of hospitalization and whose case mix includes more severely disturbed people.

Finally, an adjusted measure of hospitalization outcomes that combined the two measures introduced above is presented. This adjusted measure uses previous hospitalization rates as a *case mix adjustment* factor to make subsequent hospitalization rates a more meaningful measure of program performance. A simple measure of this adjusted outcome is derived by dividing a program's subsequent hospitalization rate by its previous hospitalization rate. An adjusted outcome ratio equal to 1.00 would indicate that the number of CRT clients who were hospitalized after treatment was equal to the number who were hospitalized before treatments. An adjusted outcome ratio that is less than 1.00 would indicate that clients of a program were less likely to be hospitalized after being served by the program (e.g., if 20% of the clients of the program had been hospitalized before being served and 10% were hospitalized after being served, the adjusted outcome measure would be 10% divided by 20%, or 0.50).

¹For more detail see Pandiani JA and Banks SM: A Global Measure of Access to Mental Health Services for a Managed Care Environment. The Journal of Mental Health Administration (24:3) summer, 1997, or Banks SM and Pandiani JA: The Utilization of State and General Hospitals for Inpatient Care. American Journal of Public Health, forthcoming.

RESULTS: On average, between 19% and 20% of the people served by CRT programs in Vermont during 1991 through 1994 had been hospitalized during the year prior to the year in which they were served. Hospitalization rates prior to community treatment were consistently higher than the statewide average for CRT programs at Howard and Southeast. Hospitalization rates prior to treatment were consistently lower than the statewide average for the CRT programs at Franklin Grand Isle and Rutland.

On average, between 15% and 16% of these same CRT clients were hospitalized during the year after the year in which they were served in the community. Rates of hospitalization subsequent to community treatment were consistently lower than rates of hospitalization before treatment for people served in CRT programs during 1991 – 1994. Hospitalization rates subsequent to treatment were consistently higher than average at Howard, Southeast, and Washington County CRT programs. Hospitalization rates subsequent to treatment were consistently lower than average at Franklin Grand Isle and Rutland CRT programs.

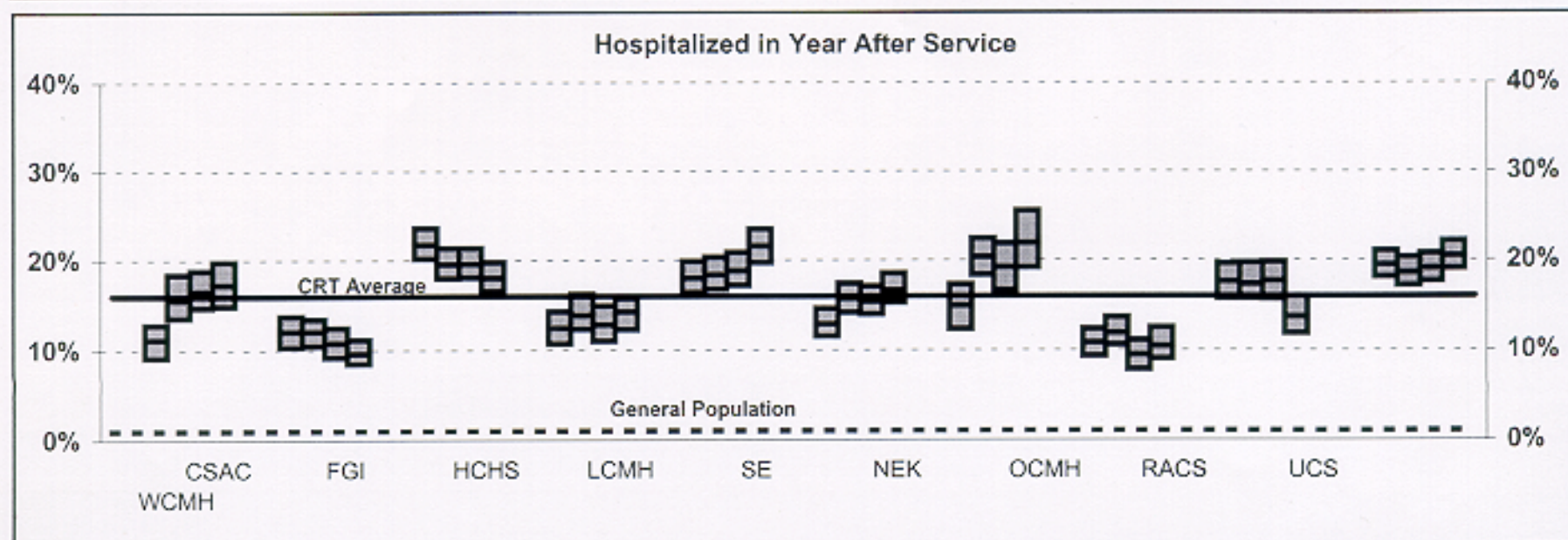
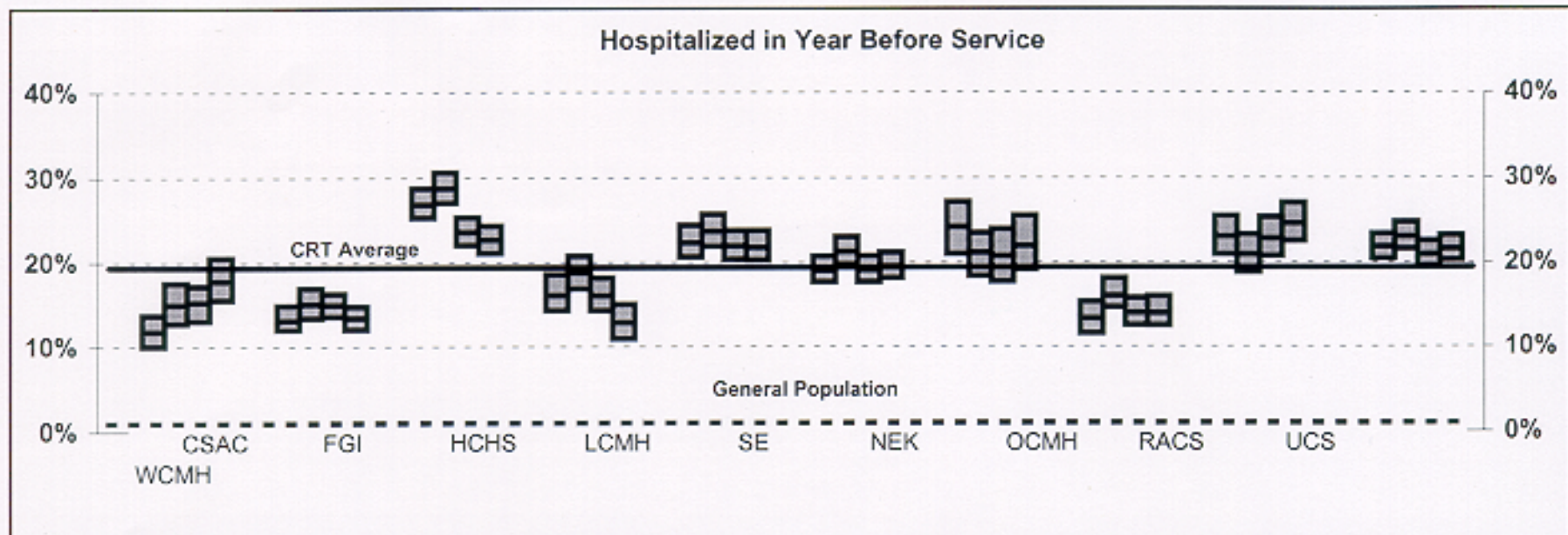
The adjusted outcome ratio indicates that the CRT programs at Howard, Northeast Kingdom, Rutland and UCS were significantly less likely to be hospitalized for behavioral health care subsequent to community treatment than prior to community treatment during every year covered by this analysis.

NEXT QUESTIONS: Are these differences in rates of hospitalization for behavioral health care related to characteristics of the CRT programs (e.g., clinical practice patterns, funding levels, caseload characteristics, staffing patterns)?

Are these differences in rates of hospitalization for behavioral health care related to characteristics of communities (e.g., poverty rates, the estimated prevalence of mental illness, the availability of inpatient services, incarceration rates)?

Will the advent of managed behavioral health care for people with severe and persistent mental illness in Vermont cause changes in these patterns of inpatient behavioral health care for clients of CRT programs in Vermont?

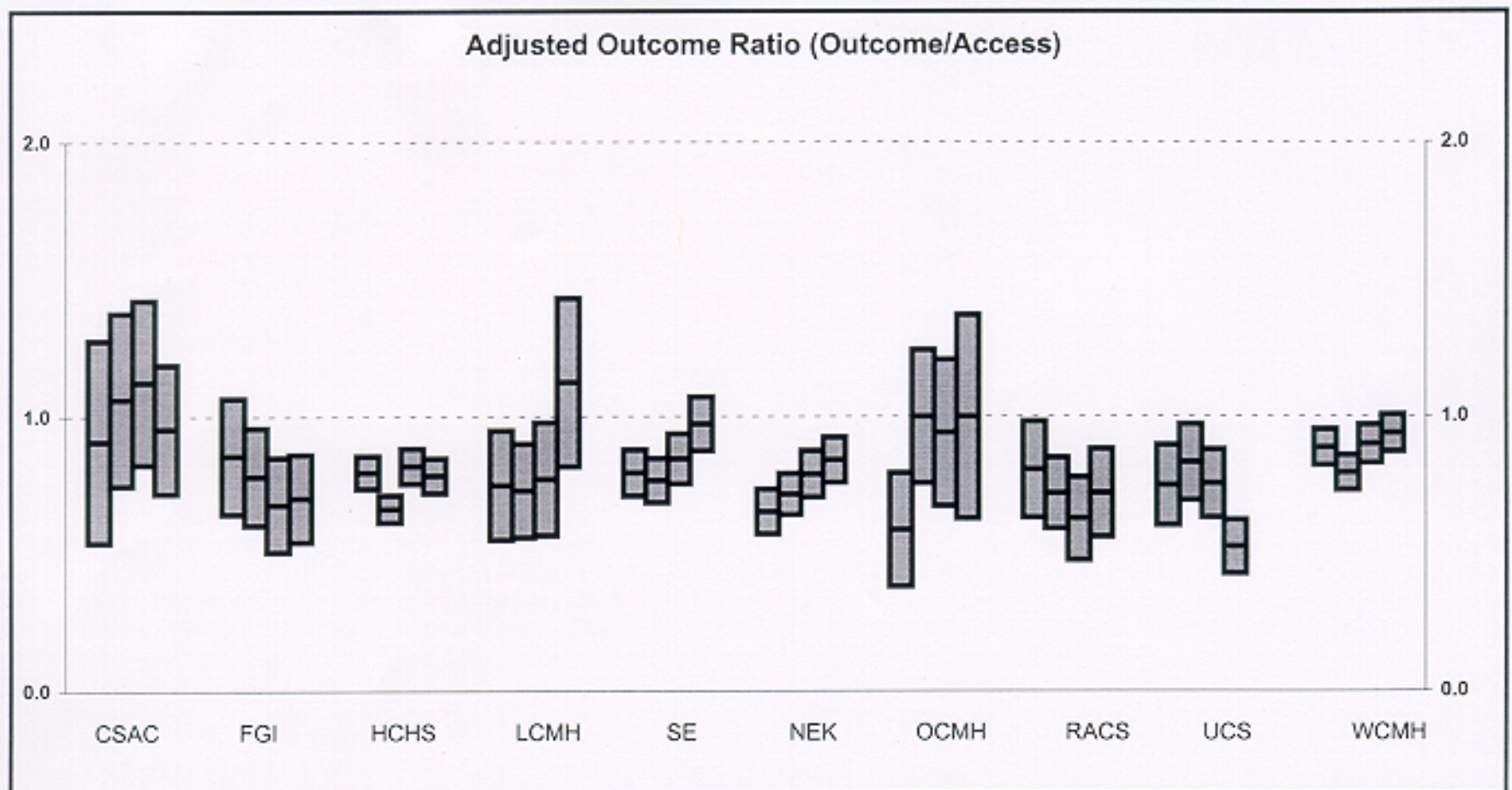
Rates of Hospitalization Before or After Community Treatment Clients Served in CRT Programs in Vermont During 1991 - 1994



	Total	CRT Program									
		CSAC	FGI	HCHS	LCMHS	SE	NEK	OCMHS	RACS	UCS	WCMHS
Total Served by CRT Programs											
1991	2,842 ± 17	109	174	525	140	402	458	81	267	153	607
1992	2,959 ± 22	125	171	561	154	393	465	98	293	223	565
1993	3,012 ± 23	122	184	580	154	383	486	96	279	217	607
1994	3,146 ± 24	141	223	616	146	370	524	47	288	244	641
% Hospitalized in the Year Before Service											
CRT Served in 1991	20%	12%	13%	27%	16%	22%	19%	24%	13%	23%	22%
95% Confidence Interval	15-25%	10-14%	12-15%	15-29%	14-19%	21-24%	18-21%	21-27%	12-15%	21-26%	20-23%
CRT Served in 1992	20%	15%	15%	29%	19%	24%	21%	21%	16%	21%	23%
95% Confidence Interval	15-25%	13-18%	13-17%	17-31%	17-21%	22-26%	20-23%	18-23%	15-18%	19-23%	22-25%
CRT Served in 1993	19%	15%	15%	24%	16%	22%	19%	21%	14%	23%	21%
95% Confidence Interval	14-24%	13-17%	14-16%	22-25%	14-18%	20-24%	18-21%	18-24%	13-16%	21-25%	20-23%
CRT Served in 1994	19%	18%	13%	23%	13%	22%	20%	22%	14%	25%	22%
95% Confidence Interval	14-24%	16-21%	12-15%	21-24%	11-15%	20-24%	18-21%	19-26%	13-16%	23-27%	20-23%
% Hospitalized in the Year After Service											
CRT Served in 1991	15%	11%	12%	22%	12%	18%	13%	15%	11%	18%	20%
95% Confidence Interval	9-22%	9-13%	10-14%	20-24%	11-14%	16-20%	12-15%	12-17%	9-12%	16-20%	18-21%
CRT Served in 1992	16%	16%	12%	20%	14%	18%	16%	20%	12%	17%	19%
95% Confidence Interval	9-22%	14-18%	11-13%	18-21%	12-16%	17-20%	14-17%	18-22%	11-14%	16-20%	17-20%
CRT Served in 1993	15%	17%	11%	20%	13%	19%	15%	19%	9%	18%	19%
95% Confidence Interval	8-23%	15-19%	9-13%	18-21%	11-15%	17-21%	14-17%	17-22%	8-11%	16-20%	18-21%
CRT Served in 1994	16%	17%	10%	18%	14%	22%	17%	22%	10%	14%	20%
95% Confidence Interval	9-22%	15-20%	9-11%	17-20%	12-16%	52-24%	15-19%	19-26%	9-13%	12-16%	19-22%

Analysis includes hospitalizations for behavioral health care at Vermont State Hospital, Brattleboro Retreat, Vermont's VA hospital, and general hospitals in Vermont and New Hampshire during calendar years.

Adjusted Outcome Ratio of Hospitalization Before and After Community Treatment Clients Served in CRT Programs in Vermont During 1991 - 1994



Year of CRT Service	CRT Program									
	CSAC	FGI	HCHS	LCMHS	SE	NEK	OCMHS	RACS	UCS	WCMHS
1991	0.9 ± 0.4	0.9 ± 0.2	0.8 ± 0.1	0.8 ± 0.2	0.8 ± 0.1	0.7 ± 0.1	0.6 ± 0.2	0.8 ± 0.2	0.8 ± 0.1	0.9 ± 0.1
1992	1.1 ± 0.3	0.8 ± 0.2	0.7 ± 0.0	0.7 ± 0.2	0.8 ± 0.1	0.7 ± 0.1	1.0 ± 0.2	0.7 ± 0.1	0.8 ± 0.1	0.8 ± 0.1
1993	1.1 ± 0.3	0.7 ± 0.2	0.8 ± 0.1	0.8 ± 0.2	0.8 ± 0.1	0.8 ± 0.1	0.9 ± 0.3	0.6 ± 0.2	0.8 ± 0.1	0.9 ± 0.1
1994	1.0 ± 0.2	0.7 ± 0.2	0.8 ± 0.1	1.1 ± 0.3	1.0 ± 0.1	0.8 ± 0.1	1.0 ± 0.4	0.7 ± 0.2	0.5 ± 0.1	0.9 ± 0.1

An Access Ratio of 1.0 indicates an equal rate of hospitalization during the year subsequent to the year in which CRT services were received. An Access Ratio greater than 1.0 indicates a greater rate of hospitalization during the year subsequent to the year in which CRT services were received. Analysis includes hospitalizations for behavioral health care at Vermont State Hospital, Brattleboro Retreat, Vermont's VA hospital, and general hospitals in Vermont and New Hampshire.